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A new species of warbler from the Aldabra Atoll

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Received 12th June, 1968

Introduction: The form of warbler here to be described as new to science was discovered during the current Royal Society Aldabra Expedition, which started in August 1967, the first specimen being taken by Penny. Any localities mentioned from the Aldabra Atoll, which lies in the western Indian Ocean at 9° 24' S., 46° 20' E., may be found on the maps (figures 3 and 4) in Stoddart and Wright (1967). This warbler seems so well differentiated as to merit description as a full species rather than as a subspecies of *Nesillas typica* (Hartlaub), of Malagasy (formerly Madagascar) and the Comoro Islands. It and *Dicrurus aldabranus* Ridgway are the only two land birds endemic to the atoll to have become differentiated to this degree. We name this form:

Nesillas aldabranus, sp. nov.

Description: The following is a brief diagnosis: A dingy coloured species, brown above, lacking any rufous tones as in *N. typica* or olive as in *N. mariae* Benson, endemic to Moheli, Comoro Islands; white below, lacking any yellowish, buffy or dusky tones, or well defined dusky streaking on the chest. In general colour, nearest to *N. t. lantzii* (Grandidier), of south-western Malagasy, but much darker brown above. A long-billed and long-tailed species, see under *Further systematic remarks* below.

A detailed description of the type, with code-references to the colour-chart of Villalobos-Dominguez and Villalobos (1947: tint OOS) is as follows: Mantle and scapulars dull brown (9 3°), somewhat more greyish

on crown (10 2°) and more rufous on rump (9 5°); wing-coverts, primaries and secondaries darker than mantle and scapulars (6 3°), outer webs tinged rufous as on rump; bastard wing and several outer feathers of lesser coverts pure white (20); under wing-coverts creamy buff (19 12°); chin, throat and centre of abdomen almost pure white (19 3°); remainder of underside white tinged with buff (18 4°); flanks pale brown (15 5°); lores and superciliary stripe white, as chin and throat; ear-coverts intermediate between general brown colour of upperside and white of underside.

Colour of soft parts (of type): Iris mid-brown; upper mandible dark horn, lower light horn; legs and feet grey, soles yellowish.

Measurements (of type): Wing 63; tail 86; tarsus 24; culmen (exposed) 15, (from base of skull) 18 mm.

Type: An adult female collected on 11th December 1967, together with its nest and three eggs, one quarter mile (400 metres) from western extremity of Middle Island (Johnny Channel, or Gionnet), on northern coast of Aldabra Atoll; collector M. J. Penny, during Phase II of the Royal Society Aldabra Expedition; in the British Museum (Natural History), registered number 1968-43-1.

Distribution: Only known from the type-locality as defined immediately above.

Other material: A second specimen was collected by Benson on 29th January 1968 during Phase III of the expedition, only a few yards from where the type was collected. It is also in the British Museum, and is a male, wing 70; tail 91; tarsus 24; culmen (exposed) 15, (from base of skull) 18 mm. The testes were small, measuring only 2 x 1.5 mm., but the skull was fully ossified. It closely resembles the female, but is a darker brown on the mantle and scapulars, the crown the same colour, lacking any contrasting greyish. It also has some indistinct dusky streaking on the chest. These minor differences may be individual regardless of sex, though on the other hand the female is in worn dress showing no sign of moult; whereas the male has fresh feathers appearing on the crown and mantle. It is indeed in general body-moult. The outer seven primaries are old, the next two in pin. The greater wing-coverts are also in pin. The tail is worn, showing no sign of any moult. The weight was 19.5 gms., and the palate was orange in colour, much the same as in *N. typica* in the Comoros (Benson, 1960a: 81).

We have no evidence of the collection of any earlier specimen of *N. aldabranus*. The genus is not mentioned in any account of the birds of Aldabra (see historical survey in Benson, 1967: 64). But it seemed just possible that a specimen might have been collected for Lord Rothschild, sent to the Tring Museum, and have been overlooked, since no special report on this collection has ever been published, nor is one available in manuscript form. But G. S. Keith (pers. comm.) cannot find such a specimen in the American Museum of Natural History, where most of the Tring collections of birds were sent in 1932.

Nest and eggs: The three eggs collected were fresh, though it was evident from the gonads of the parent that the clutch was complete. They are ovate, smooth, with a slight gloss, very pale purplish, blotched and speckled dark brown, with a very few small scrawls, on underlying pale lilac blotches, the markings as a whole being concentrated in a well defined ring near the larger end of each egg. One egg has a more markedly pink

flush towards the larger end, and the markings are heavier than in the other two. Two eggs measure 20 x 16, 20 x 15 mm.; the other was broken. These eggs are comparable in size with the smallest of a series of 21 miscellaneous eggs of *N. typica* from Malagasy in the British Museum, showing much variation in intensity of ground-colour and degree of marking. Several resemble the Aldabra clutch in both these respects, though not one has so clearly a defined ring of markings, and most of them have much more scrawling. Scrawls are also shown in plate 13, fig. 6 accompanying Newton (1863: 343, 461), who collected a clutch in Malagasy. The egg as painted is a close match with some of those in the British Museum. Benson (1960a: 82) reports similar eggs from Anjouan, in the Comoros, now in the Muséum National d'Histoire Naturelle, Paris.



Photograph by M. J. Penny

Nest and eggs of *Nesillas aldabranus*

The nest was two feet above the ground, in the leaf-bases of a young *Pandanus* sp. shrub, and is a cup made of shredded leaves of this same plant, coarser on the outside, finer within, and lined with grass-stems. Its approximate dimensions are: width, external 120, internal 80 mm.; depth, external 80, internal 30 mm. It was at the centre of a clump of young leaves, well protected but unconcealed, on the edge of a path. Two more nests, both empty, were found on 28th January, both less than 100 yards from the first one. One was 10 feet above the ground, near the top of a thicket, built between two stems (respectively $\frac{1}{6}$ and $\frac{1}{3}$ inch thick, at an angle of 80° to each other) of a shrub *Mystroxydon aethiopicum*. The other was five feet up, in a *Pemphis acidula* shrub some seven feet high, built between two forking stems each about $\frac{1}{3}$ inch thick. Both nests were in good condition, apparently not long abandoned. Materials, construc-

tion and dimensions are similar in all three, now in the British Museum together with the eggs.

Probably the clutch-size on Aldabra is either two or three. From Malagasy, Newton (1863: 343) records a C/3, Rand (1936: 441) a C/2. From Anjouan, in the Comoros, Benson (1960a: 82) records three C/2. In the Seychelles, Loustau-Lalanne (1962: 5) gives C/2 for another warbler, *Bebrornis sechellensis* (Oustalet), but the Bristol Seychelles Expedition of 1964-65, of which Penny was the leader, noted five fledged young, each of which was the only bird with its parent. The clutch-size of the Rodriguez species, *B. rodericanus* (A. Newton), may also be only one, for Sharpe (1879: 461) mentions that "Mr. Gulliver brought an egg." This single egg is in the British Museum.

Voice: Penny saw a second bird at the nest, presumably the male parent. He recorded what he took to be an alarm-call as a harsh "chirrr", and incidentally also noted that neither bird was particularly timid. He found that the one would answer the other with a nasal, trisyllabic, not unmusical "chinkachoy". Benson could not hear any call, the voice evidently being already too high pitched for his ear. But A. W. Diamond described to him an alarm-call as a short, scolding chatter, reminiscent of that of a Wren *Troglodytes troglodytes* (Linnaeus) in England, and probably the same as that noted by Penny.

Food and ecology: The stomach contents of the male, which was foraging some two feet above the ground, have been determined by A. M. Hutson, of the Department of Entomology, British Museum, as follows: many small spiders (Arachnida); many moths (Lepidoptera); many winged ants (Hymenoptera); some small beetles (Coleoptera) and bugs (Hemiptera and Homoptera); one caterpillar (Lepidoptera) and possibly a small grasshopper (Orthoptera).

The type-locality of *N. aldabranus* was visited by Dr. F. R. Fosberg with Benson on 2nd March 1968. Fosberg has described the vegetation as a dense tall scrub about 15 feet high, in places almost forest, and in which he found the following plants (identifications still tentative):

<i>Shrubs</i>	<i>Remarks</i>
<i>Pandanus</i> sp.	} The five most common species. In some places the <i>Pandanus</i> was growing almost pure; in others the <i>Pemphis</i> likewise
<i>Pemphis acidula</i> Forst.	
<i>Sideroxylyon inerme</i> L.	
<i>Dracaena reflexa</i> Lam.	
<i>Mystroxylyon aethiopicum</i> (Thunb.) Loesn.	
<i>Terminalia fatraea</i> DC.	} Fairly common
<i>Acalypha claoxyloides</i> Hutch.	
<i>Euphorbia abbottii</i> Baker	
<i>Maytenus senegalensis</i> (Lam.) Exell	
<i>Ficus</i> sp. (leaves medium-sized)	
<i>Tricalysia cuneifolia</i> Baker	Occasional
<i>Scutia commersonii</i> Brong.	} Rare
<i>Ficus</i> sp. (leaves large-sized)	

Other smaller plants noted were *Lomatophyllum borbonicum* Willd., *Lepturus repens* (Forst. f.) R. Br. and *Asystasia* sp. (herbaceous); juvenile specimens of *Solanum aldabrense* Wright; *Caesalpinia bonduc* (L.) Roxb.

and *Ipomoea tuba* (Schlecht.) Don (climbing vines); and *Pleurostelma cernuum* (Decne.) Bullock.

Except for the *Dracaena*, normally uncommon on Aldabra, Fosberg did not find any ecological peculiarity about this locality. Yet *Nesillas aldabranus* has only been found there, despite the fact that during the period August 1967 to March 1968 between us we have searched the greater part of Aldabra for land birds. Furthermore, several other members of the expedition have kept a special watch for the bird, but without result. However, at present a cleared path runs east from Johnny Channel for only about one third of a mile (600 metres) along the north coast of Middle Island. Further east, observation is virtually impossible because the scrub is so thick, though we got no evidence of the bird's occurrence within two miles (three kilometres) of the eastern end of Middle Island, where it again becomes relatively easy to move about. But plainly the intervening nine miles (14 kilometres) require investigation. This is only the likely area for its occurrence, and searches on Ile Polymnie, to the west of Johnny Channel, have been fruitless. In advance of our general report on the land birds of Aldabra, it can be stated with certainty that no other species is so restricted in distribution. The majority of them range through the greater part of the atoll; for the most recent accounts, see Benson (1967: 70-89) and Gaymer (1967: 116-122).

Further systematic remarks: The resemblance between *N. typica lantzii* and *N. aldabranus*, widely separated geographically, yet both dingily coloured, may be due to both living in a relatively arid climate. According to Rand (1936: 443), *lantzii* inhabits the dry south-western part of Malagasy, where the rainfall does not average anywhere more than 1,000 millimetres (40 inches) per annum, and in the extreme south-west is less than half this figure (rainfall map of Malagasy in Rand, 1936: 206). No record had ever been kept on Aldabra until a rain gauge was established at the Settlement on West Island on 17th October 1967, between which date and 31st March 1968 the rainfall was 14.17 inches. These are the very months in which the figure may be expected to be highest, as in Malagasy, where the hot, wet season is from November to April (Rand, 1936: 205). This initial figure does not suggest a high rainfall on Aldabra. Local belief was that it was unusually low, and there are the following figures from the island of Assumption, only 20 miles to the south of Aldabra: 1965, 32.03 inches; 1966, 26.24 inches. Nevertheless, the average on Aldabra may be less than anywhere in the Comoro Islands (for some rather scanty figures suggesting a figure nowhere of appreciably less than 40 inches per annum, see Benson, 1960a: 10-11) or Malagasy except the south-west. Benson (1967: 105) has already drawn attention to a reduction of melanin, often resulting in an increase in pallor, in some other land birds on Aldabra and *N. aldabranus* seems to provide another instance of this tendency.

Benson (1960a: 79) gives tail/wing ratios for various forms of *Nesillas* in Malagasy and the Comoros, but did not give a figure for *N. t. lantzii*, which may now be added, from material in the British Museum:

	Wing	Tail	$\frac{100 \times \text{tail}}{\text{wing}}$
5♂♂	62, 62, 65, 65, 66	80, 82, 82, 85, 85	
7♀♀	57, 59, 60, 61, 61, 62, 63	71, 73, 75, 76, 76, 77, 78	
	average 61.9 mm.	average 78.3 mm.	126.5

The ratio for *N. mariae* (Benson's 'series (a)' from Moheli) is 102.5, while that for *N. typica* in the Comoros varies between 94.3 and 119.9, and in Malagasy between 118.5 and 126.5. The comparable figure for *N. aldabranus* (from above, ♂♀, wing 70, 63, tail 91, 86 mm.) works out at as high as 133.1.

The following are average lengths (in mm.) of culmen (exposed part) and tarsus, of material in the British Museum, with the addition of two syntypes of *N. t. longicaudata* (E. Newton) in the University Museum of Zoology, Cambridge:

	Culmen (exposed)		Tarsus
	Malagasy		
<i>N. t. typica</i>	33♂♂	13.1	25.4
	12♀♀	12.6	24.3
<i>N. t. obscura</i>	7♂♂	14.7	25.4
	3♀♀	13.6	23.6
<i>N. t. ellisii</i>	14♂♂	13.1	25.7
	7♀♀	13.1	24.8
<i>N. t. lantzii</i>	5♂♂	13.2	23.6
	6♀♀	13.2	22.5
	Comoro Islands		
<i>N. t. longicaudata</i> (Anjouan)	3♂♂	14.3	25.2
	3♀♀	14.2	24.7
<i>N. t. brevicaudata</i> (Grand Comoro)	2♂♂	14.0	27.5
	3♀♀	15.0	26.6
<i>N. t. moheliensis</i> (Moheli)	1♂	15.0	25.0
	1♀	14.0	25.0
<i>N. mariae</i> (Moheli)	3♂♂	14.7	22.7
	♀	—	—
	Aldabra		
<i>N. aldabranus</i>	1♂	15.0	24.0
	1♀	15.0	24.0

These figures, taken by Penny independently, suggest that there is a tendency to a longer bill in the Comoros and on Aldabra than in Malagasy, the two Aldabra figures being as high as any. But the Malagasy *N. t. obscura* Delacour forms an exception, since it is long-billed. These tendencies are corroborated by the figures taken by Benson (1960a: 81), who measured the culmen to the base of the skull (as explained *op. cit.*: 30), not the exposed part only. The two Aldabra specimens both have a culmen length (from base of skull) of as much as 18 mm., and on this basis the ratio of 100 x culmen/wing works out at 27.6, thus higher than in any Malagasy or Comoro form measured by Benson (1960a: 81), with the exception of *N. t. longicaudata*. Benson (1960b: 200) has drawn attention to a tendency to a longer bill in the Comoros than in Malagasy, not only in *Nesillas typica*, but in several other birds too. Grant (1965) found that in North America and Mexico there is a strong tendency for island birds to have a longer bill than their mainland counterparts, and suggested that this is

an adaptation to deal with a greater range of food sizes. He also found a tendency for the tarsus to be longer in island birds, though this is not supported by the figures above, with the exception of *N. t. brevicaudata*, the sample of which is rather small.

Brief mention may be made of *Bebrornis sechellensis* and *B. rodericanus*. Benson (1960a) did not consider the latter, though suggested that the former is congeneric with *Nesillas*. In that case, the correct name to use is *Bebrornis*, which antedates *Nesillas*, see Sclater (1930: 518, 574). But it is perhaps best to maintain both genera. Both *sechellensis* and *rodericanus* have some olive wash above, and yellowish buff below. Benson (1960a: 80) has given measurements for *sechellensis*, showing that it is unusually short-tailed and long-billed. Comparable figures for *rodericanus*, using material in Paris and Cambridge, as well as in the British Museum, regardless of sex are:

1200	wing	58 – 63 (61.1) mm.
	tail	67 – 74 (70.5) mm.
	100 X tail	
	wing	115.4
	culmen (from base)	17 – 19 (17.9) mm.
	100 X culmen	
	wing	29.3

Considering also figures for *Nesillas*, it can be seen that *rodericanus* is both relatively long-tailed and long-billed. Indeed, the culmen/wing ratio is the highest of all.

ACKNOWLEDGMENTS

Special thanks are due to A. W. Diamond for his assistance in the discovery of *N. aldabranus*. Benson would like to thank in addition H. Stickley. The co-operation of Dr. F. R. Fosberg and others has already been mentioned, while Dr. D. R. Stoddart, the leader of the Royal Society Aldabra Expedition, has advised in the preparation of this paper. We are also grateful to the staff of the Bird Room in the British Museum for their assistance.

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